State of California
Office of Statewide Health Planning and Development
Division of Facility Development
Structural Engineering Section

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Standard Structural and Anchorage Review Comments
per 1995 California Building Code (AKA **0619**)

Applicable to single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light steel-frame construction for projects **received after December 29, 1995.**

(a) Marked plans and response

The structural and anchorage comments are shown on this set of drawings in red pencil. Each comment is identified by a number such as S-1, S-2, S-3, etc, and is enclosed in a cloud.

The text of standard structural comments called out on the review set by "0619(a)" etc, can be found in the attached list of standard structural comments.

The comments all refer to California Code of Regulations (CCR) Title 24 Part 1 Section 7-125(b) unless another section of either Title 24 Part 1 or Part 2 is specifically cited.

In order to facilitate the backcheck, please respond in writing to each comment. Your response may be in the form of a letter or each response may be written on this final review set of drawings near the comment in a color other than red or green. If the responses are presented in a letter, identify the comment by drawing sheet number and the comment number. In either case, each response should specify how and where on the resubmitted drawings, specifications, or calculations the OSHPD comments have been resolved.

If you have any questions, please do not hesitate to call the Structural Reviewer:

_____
(name)

_____
(phone)

(b) Equipment Anchorage (less than 400#)

Show the following note prominently on the plans:

"Attachments of equipment weighing less than 400# and supported directly on the floor or roof structure, furniture or temporary or movable equipment and equipment weighing less than 20# that is supported by vibration isolation devices suspended from the roof, wall or floor need not be detailed on the plans. (1994 UBC with California Amendments Section 1630.1) However, such equipment must be supported and anchored to resist the forces prescribed by 1994 UBC with California Amendments Section 1630.2, and the anchorage shall be approved by the Structural Engineer of Record and OSHPD as a part of field reviews/inspections. The Inspector of Record shall assure that the above requirements are enforced.

(c) Intent of the Drawings

Due to the difficulty of anticipating every unsatisfactory condition that may arise in connection with an existing facility where alteration or reconstruction work is proposed, the following clause or one of similar meaning shall be included on the plans or in the specifications:

"The intent of the drawings and specifications is to reconstruct the building in accordance with the 1994 Uniform Building Code with State of California Amendments (1995 CBC). Should any condition develop not covered by the contract documents wherein the finished work will not comply with said Code, a change order detailing and specifying the required work shall be submitted to and approved by OSHPD before proceeding with the work."

The above is required by CCR Title 24, Part 1, Section 7-125(b)(2).

(d) Pipe and Duct Supports

Provide calculations and details for the support and bracing of all pipes, ducts, and conduits or show a note on the plans or in the specifications requiring that pipes, ducts, and conduits be supported and braced per OSHPD anchorage pre-approval No. R-0010, the SMACNA "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems", R-0003 the Superstrut "Seismic Restraint System", R-0114 B-Line System, R-0120 Unistrut "Seismic Bracing Systems" or other OSHPD preapproved system. Once the exact location of all pipes, ducts and conduits have been established, the structural engineer must check the adequacy of the supporting structure to ensure that the original design is still adequate. See footnotes 14 and 15 to CBC Title 24 Part 2 Table 16A-O for limitations.

(e) Equipment Anchorage

Provide details on the plans or in the specifications and substantiating calculations (when necessary) for the support and anchorage of *fixed equipment (mechanical, electrical, medical and miscellaneous) if:

a. The equipment has an operating weight over 400 pounds and is mounted directly on the floor or roof, or:

b. The equipment has an operating weight over 20 pounds and is suspended from the roof, floor, or wall or is supported by vibration isolation devices.

*Fixed equipment is defined as equipment which is anchored to the structure. Equipment must be anchored if it is permanently attached to the building utility services such as electricity, gas, or water.

Refer to IR 23-7 for a more detailed list.

The details must be clearly coordinated with the calculations and the manufacture's literature. Sketches shown in the calculations for the purpose of illustrating the analytical method are not adequate. OSHPD does not approve calculations; therefore, they cannot appear on the approved plans or specifications.

These details and calculations may not necessarily be the responsibility of the Structural Engineer of Record. Reference CCR Title 24, Part 1, Section 7-125(c)(2)(K), 7-125(c)(4)(M), and 7-125(c)(5)(L).

(f) Vibration Isolators

For all vibration isolators and their anchorages, provide calculations, details, and/or test data to substantiate the isolator's capacity for vertical and lateral loads or use OSHPD pre-approved isolators. Calculations must also be submitted (whether preapproved or not) to substantiate the size, quantity, location and connection to structure of the isolator. The drawings must be closely coordinated with the calculations and clearly specify the manufacturer, model type, model number, base plate size, quantity used and location at each piece of equipment, and how it is attached to the structure. Isolators which support a component inside the unit (black box) will not be reviewed.

(g) Expansion Anchors

For all concrete and masonry expansion or adhesive type anchors used, show on the plans or in the specifications the manufacturer, type, diameter, minimum embedment, concrete type(s) and strength(s). Allowable loads are defined in IR 26-6. Show the actual magnitudes of the test loads on the contract documents. Testing is required per 1994 UBC with California Amendments Section 1925.4.

(h) Wood Trusses

OSHPD GUIDELINES FOR DEFERRED APPROVAL OF WOOD TRUSSES

a. OSHPD will defer the approval of wood trusses if the following information is shown on the plans:

1) Architectural drawings shall show a roof plan including locations of roof mounted mechanical/electrical equipment.

2) The structural roof framing plan shall specify the location of all trusses and designate each truss based on geometry and loading. The outlines of major M/E equipment shall be shown on the roof framing plan.

3) Dimensioned outlines of each truss type indicating support points and upper and lower chord design loads, including any lateral loads from the roof diaphragms, shall be provided in the structural drawings.

4) Special truss and framing connection details, e.g., attachments to shear walls, connections at all supports, etc., shall be provided in the structural drawings.

5) A note shall be provided in the structural drawings specifying the allowable bearing stress on the top plate and requiring that the truss design include all connections and bearing improvements.

6) All lumber used in trusses shall have a moisture content of not less than 11 percent nor more than 19 percent at the time of fabrication, per 1994 UBC with California Amendments Section2311.6a.

7) Continuous in-plant inspection of prefabricated trusses is required per 1994 UBC with California Amendments Section 2311.6.1.

b. The deferred approval truss submittal must include the following:

1) The deferred truss drawings must be keyed to the truss designations on the structural roof framing plan and must show the dimensions of the truss and truss members; member sizes, species and lumber grade; required bracing such as web bracing; joint connector details and dimensions including placement in relation to the joint.

2) The truss calculations must include the design loads; the actual and allowable bending stress and axial stress; a check of combined bending and axial stresses; and truss deflections. Repetitive member design values for F_b shall not be used.

3) All connector plates at joints where the centerline of the members do not intersect at a point (such as heel joints) must be designed to accommodate the effects of eccentric loading by either performing a rigorous analysis, such as the method shown in IR 25-6, or by reducing the allowable connector loads per Division lll, Table 23-lll-PP, or by an acceptable rational method.

4) Light metal plate connectors shall comply with the requirements of Section 2343. The allowable loads for these connectors shall be referenced from an appropriate ICBO Research Report or established through independent verified testing in accordance with Section 2343.4. Note that there are no accepted standards for

glued trusses.

5) The deferred truss drawings and specifications shall be signed by the structural engineer of record.

6) Any proposed submittals to be made as a result of the deferred truss design must be submitted by the architect or structural engineer in responsible charge of the work.

7) The deferred truss design and drawings should be submitted sufficiently in advance of the desired date of approval to provide time for the initial review by OSHPD and, realistically, at least one (1) cycle of response and backcheck review.

8) Leave a blank space on the drawings for the 2½" by 4¼" OSHPD approval stamp.

(i) Signature - Structural Engineer

All final structural drawings and specifications shall bear the structural engineer's stamp or seal, signature, and expiration date per California Business and Professions Code, Section 6735 and CCR Title 24 Part 1 Section 7-115(a).(i)

(j) Not used

(k) Not used

(l) Not used

(m) Geologic Hazards Report

Provide a geologic and earthquake engineering report per Section 1634.1.

(n) Soils Report

Provide a soils report per Section 1634.2.

(o) Separate the substantiating documentation from the post approval contract documents to be stamped "Approved" by OSHPD and bind them separately. OSHPD only approves plans and specifications, it does not approve substantiating documentation such as calculations, cost estimates, manufacturer cut sheets, etc. These substantiating documents should be submitted if they are required for approval of the contract documents but they must not be found on, and should not be bound in the contract documents to be stamped "Approved". Clearly identify the documents to be stamped "Approved" by numbering all of the sheets which comprise changes to the existing OSHPD "Approved" contract documents. Provide a cover sheet with a complete index of the documents to be stamped "Approved". Changes to the existing OSHPD "Approved" contract documents must be identified by clouding them on the plans or identifying them by some other means.

(p) Equipment Not In Contract (NIC)

For all new or relocated equipment to be installed under the scope of this application and designated as "by others" or "not in contract," it is the responsibility of the architect and/or the structural engineer in general responsible charge of the project to sign and submit the necessary drawings, specifications, and design calculations to OSHPD for review and approval. Alternatively, exclude the equipment from the plans and the scope of this application. All equipment thus excluded can be installed only after obtaining the approval of OSHPD under a separate application.

(q) Kitchen Equipment

Provide calculations and details for the support and anchorage of all kitchen equipment that is to be permanently fastened to the building or utilities. Alternatively, show a note on the plans or in the specifications requiring that the kitchen equipment be supported and anchored per the SMACNA "Guidelines for Seismic Restraints of Kitchen Equipment." Specify the SMACNA Guideline page number that applies to each piece of equipment being anchored.

(r) Equipment Anchorage Approval

Equipment anchorage details required by IR 23-7 must be approved by OSHPD, prior to fabrication and installation, in one of the following ways:

a. If the equipment has been specified such that anchorage details can be determined, then the details must be shown on the drawings or in the specifications. No reference to "or equal" is allowed unless it is clearly specified that any "or equal" substitutions must be approved by OSHPD by means of a change order, or:

b. Where the anchorage details cannot yet be determined, then their approval will be **deferred** if all of the following conditions are met:

1) The anchorage cannot be fully detailed on the approved drawings or specifications because of variations in product design or manufacture; e.g., the manufacturer has not yet been chosen, or specified equipment is for performance criteria only.

2) All items requiring deferred approval must be listed under a separate heading on the drawings, preferably on the title sheet, and on a letter size sheet which will be attached to the building permit. This list must include the maximum weight of the equipment for which the supporting structure was designed. Clearly indicate that OSHPD approval of the deferred portion is required prior to fabrication and/or installation.

3) The drawings and specifications must fully describe the performance and loading criteria for such work. The design of the supporting building structure cannot be deferred; therefore, show the maximum allowable equipment weight on the drawings. When the equipment is chosen, the adequacy of the supporting structure can be substantiated by comparing the actual equipment weight to the maximum allowable equipment weight shown on the plans.

4) The architect and/or engineer responsible for preparation of drawings and specifications for the main project, as listed on the applications, shall sign the drawings and specifications for the deferred approval items.

5) The anchorage details and calculations must be submitted sufficiently in advance of the desired date of approval to provide time for the initial review by OSHPD and at least one cycle of response and backcheck review.

(s) Grab Bars

Show on the plans details of how grab bars and/or tub and shower seats, located in handicapped toilets and shower stalls, are connected to the supporting structure.

(t) Television Brackets

The design of wall or ceiling mounted television and monitor brackets shall comply with the Section 1630.2a and Table 23-O. The design shall include: 1) The connection of the bracket to the structure; 2) The supporting structure; and 3) The bracket itself. A factor of four times the value of C_p should be used to account for the flexibility of the bracket. Substantiation by laboratory testing is also acceptable. The test loads, methods, and procedures should be approved by OSHPD prior to testing so that possible retesting will not be required.

(u) Fire Sprinklers

Show a note on the plans or in the specifications requiring that the spacing and details of the support and bracing of fire sprinkler piping comply with the 1994 edition of NFPA 13. Provide anchorage details and calculations for the connection of sway bracing to the structure. Design loads for the anchorage may be computed per Table 4-6.4.3.5.2 of NFPA 13 or by a rational analysis of the piping system. Where applicable, details for the support and bracing may be referred to an OSHPD pre-approved anchorage system such as R-0003, R-0010,etc. All shop drawings of the sprinkler system shall be submitted to OSHPD for review and approval prior to installation. The allowable values for anchors in Table 4-6.4.3.5.4 may not comply with the requirements of the Uniform Building Code or the CBC. Refer to the adopted UBC standards for allowable loads on the specific fastener type.

(v) Tests and Inspection

The enclosed form entitled "Structural Tests and Inspections" must be completed and signed by the structural engineer or, if there is not a structural engineer on the project, the architect in general responsible charge. This form must be approved by this Office before a building permit is issued.

(w) Not used

(x) Not used

(y) Incomplete submittals

The following comments are based on a preliminary or incomplete submittal. A more thorough review will be made upon resubmittal and additional comments will follow.

(z) Not used